## REMARKS

Claims 6-14 are pending in the application. Reconsideration of the claims is respectfully requested.

**Comments Related to Correspondence Address**

A Revocation and Power of Attorney was filed on September 19, 2003, in this case, along with the response to the previous amendment. A copy of that Revocation and Power of Attorney is attached hereto. The subsequent office action of December 30, 2003, was directed to Mr. A. J. Mangels, who originally filed this case. This office action should have been addressed to Altera Law Group, Customer No. 22865 as directed in the Revocation and Power of Attorney.

The undersigned attorney has changed address from the law firm listed in the Revocation and Power of Attorney: a change of correspondence address form accompanies this response. It is requested that the Office's records be updated to show that the correspondence address for this case is now Customer No. 38846.

**Rejection under 35 U.S.C. § 103**

Claims 6-14 are rejected under 35 U.S.C. §103 (a) as being unpatentable over by Shin (U.S. Patent 5,872,479). Shin describes an apparatus for regulating substrate voltage in a semiconductor device having a substrate voltage regulator for controlling generation of a substrate voltage so as to supply a preset-substrate voltage to a substrate.

Three criteria must be met to establish a *prima facie* case of obviousness. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference. Second, there must be a reasonable expectation of success. Finally, the prior art reference, or combination of references, must teach or suggest all the claim limitations. MPEP § 2142. Applicant respectfully traverses the rejection since the cited reference fails to teach all the elements of the claimed invention, it would not be obvious to one of ordinary skill in the art to modify the claims in the manner proposed to arrive at the claimed invention, nor would one of ordinary skill in the art be motivated to modify the cited art in the manner proposed.

It is stated in the Office Action that teaches a method of determining respective voltages across the different laser sections when operating the laser and holding the determined respective

voltages across the different laser sections constant when operating the laser so as to maintain a desired operation point. It is also stated that Shin fails to teach that the laser is a tunable laser and that Shin only teaches a semiconductor laser which encompasses a tunable laser. It is further stated that it would have been obvious to one of ordinary skill in the art at the time of the invention to use a tunable laser in order to maintain constant voltage regardless of an unstable variation in power.

Applicants strongly disagree with the characterization of Shin presented in the Office Action. First, it is important to note that Shin does not teach or suggest anything to do with a laser – Shin does not contain the word laser and does not even refer to any type of semiconductor device that emits light. Accordingly, the assertion made in the Office Action that Shin teaches a semiconductor laser is simply incorrect.

Instead, Shin teaches the control of the voltage on the substrate of a semiconductor device, and more particularly teaches an apparatus that regulates the substrate voltage in a semiconductor device capable of obtaining accurate circuit operation in a manner that the substrate voltage is maintained constant regardless of an unstable variation in the power supply voltage. This would not be helpful to one of ordinary skill in the art who was trying to solve the problem addressed by the present invention.

Turning more particularly to the three criteria needed for a *prima facie* case of obviousness, we first address the issue of Shin teaching the elements of the invention. According to claims 6 and 10, the laser has various laser sections and has been characterized with respect to one or more laser operation points, each of the laser operation points corresponding to a set of different control conditions for the different laser sections. Shin, as has just been described, does not teach a laser, nor does Shin teach or suggest a semiconductor laser having different sections. Shin also fails to teach or suggest that the laser is characterized with respect to one or more operating points. In claim 6, the first step of the method includes determining respective voltages across the different laser sections when operating the tunable laser, and the second step includes holding the determined respective voltages across the different laser sections at constant levels when operating the tunable laser. In claim 10, there is a voltage unit that applies voltages to the different sections at desired constant levels, corresponding a set of predetermined voltages associated with the desired operating point. Shin neither teaches nor suggests that the voltages,

associated with a desired operating point, be applied to the different laser sections at constant levels.

As can be seen from the paragraph above, Shin is fatally deficient in describing the elements of the claimed invention.

Furthermore, there is no teaching or suggestion in Shin that would motivate one of ordinary skill in the art to modify Shin in the manner proposed. As was stated in the application, for example at page 1 of the Substitute Specification, first full paragraph in "Description of the Related Art", tunable semiconductor lasers include several, typically three or four, different sections through which current is injected independently, and the wavelength, power and mode purity of the lasers can be controlled by adjusting the current in the various sections. At page 5 of the substitute Specification, it is stated that degradation of the relationship between wavelength and current can occur in time, thereby destroying the wavelength accuracy of the laser. This is conventionally corrected by recalibrating the laser.

It is an important feature of the present invention, however, that it is the voltage across the different laser sections, and not the current through the laser sections, that is kept constant (pages 5-7). This was found by the Applicants as a useful way of overcoming the problems that arise due to the gradual change in the current characteristic of the laser with time, since the voltage characteristic is more constant over time than the current characteristic. This avoids the need to recalibrate the laser as often as is necessary when the laser stabilization is based on constant current. There is no evidence that Shin understood the problems with degradation in tunable semiconductor lasers, nor does Shin teach or suggest that the problems of gradually degrading current characteristics can be reduced or avoided by maintaining a constant voltage over the different laser sections, rather than constant currents.

Accordingly, Shin fails to teach the elements of the invention. Furthermore, Applicants assert that the teaching in Shin is so far removed from the invention that it would not be obvious to one of ordinary skill to modify Shin to arrive at the present invention. Therefore, the inventions of claims 6 and 10 are not obvious in view of Shin, and are allowable.

Claims 7-9 and 11-14 further define the inventions of claims 6 and 10 and depend therefrom. These claims are, therefore, also allowable.

Regarding claim 7, it is stated in the Office Action that Shin teaches applying a set of predetermined constant voltages at col. 6, lines 5-11. This portion of Shin states "As so far

described, according to the present apparatus for regulating the substrate voltage in the semiconductor device, the substrate voltage is maintained constant regardless of an unstable variation of the power supply voltage applied from an external source so as to prevent a threshold voltage variation and an operation point variation in the device, thereby obtaining an accurate circuit operation."

Claim 7 is directed to applying a set of predetermined constant voltages across respective laser sections of the tunable laser from a voltage source. Applicants respectfully point out that the cited passage from Shin fails to teach or suggest applying constant voltages across respective laser sections of a tunable laser. Therefore, Shin fails to teach or suggest the elements of claim 7.

Regarding claims 8 and 9, it is stated that Shin teaches the elements of these claims at col. 4, lines 12-40. Claim 8 is directed to measuring the voltage across the different laser sections and adjusting the applied voltage so as to maintain the predetermined voltage across each section. Shin fails to teach or suggest measuring voltages across laser sections, and fails to teach or suggest that the voltages applied to the different laser sections should be maintain at constant levels corresponding to the predetermined levels.

Claim 9 is directed to changing the current applied to each laser section so as to maintain the predetermined voltages constant. Shin fails to teach or suggest applying currents to different sections of a laser.

**Conclusion**

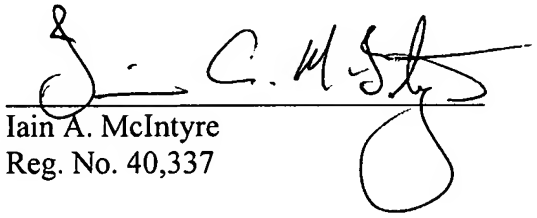
In view of the amendments and reasons provided above, it is believed that all pending claims are in condition for allowance. Applicant respectfully requests favorable reconsideration and early allowance of all pending claims.

If a telephone conference would be helpful in resolving any issues concerning this communication, please contact the below-signed attorney at 612-436-9610.

Respectfully submitted,

CCVL P.A.
Customer Number 38846

Date: February 25, 2004

By: 
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